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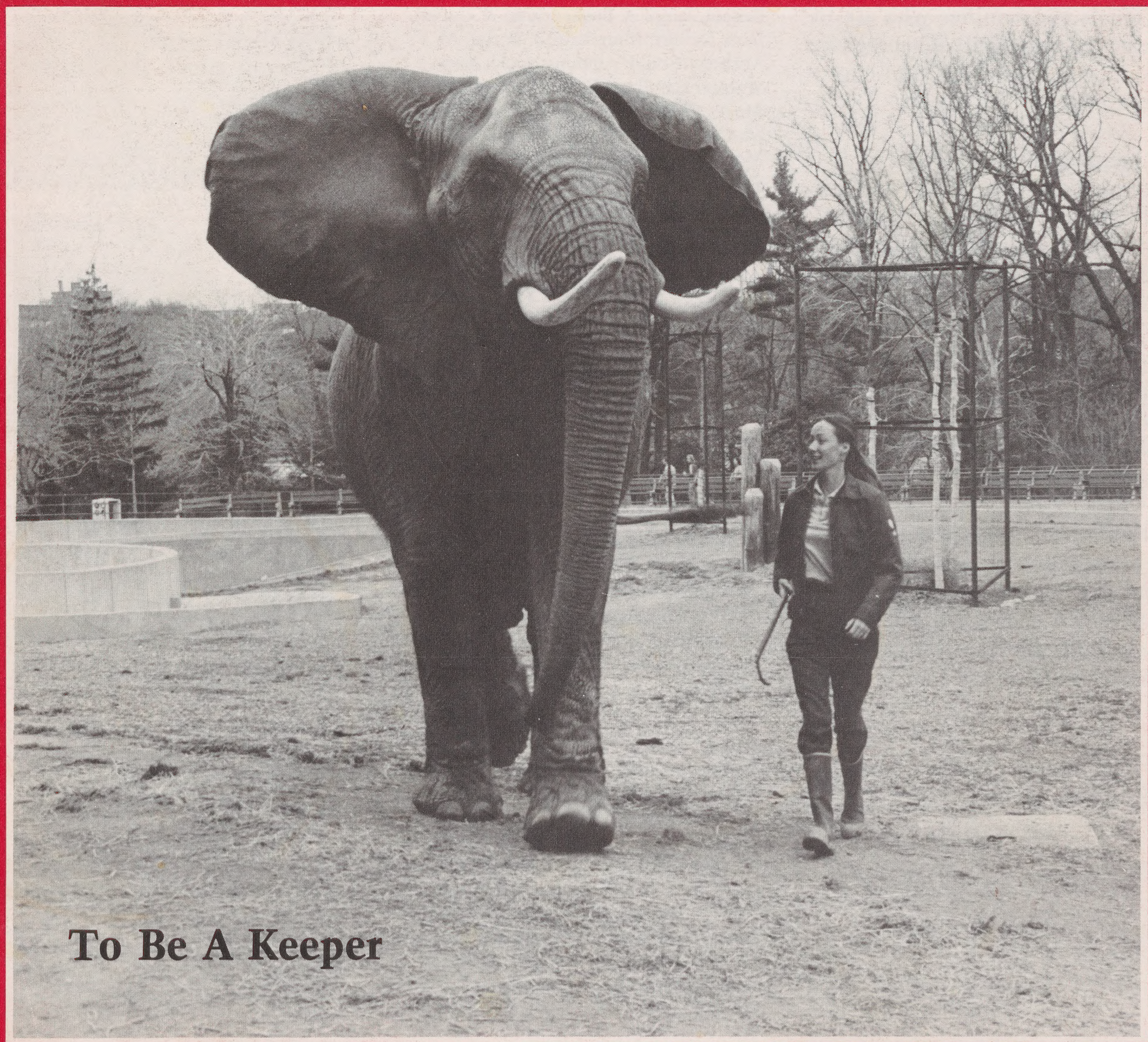

To Be A Keeper

Friends of the National Zoo

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Front Cover

NZP keeper Kathy Wallace works with the Zoo's African elephant by using the ankus, a curved tool with which keepers direct the animals just as mother elephants direct their young with their tusks. For more on the life of a zoo keeper, see Rena Yount's article on page 4.
(Photo by Martha Tabor)

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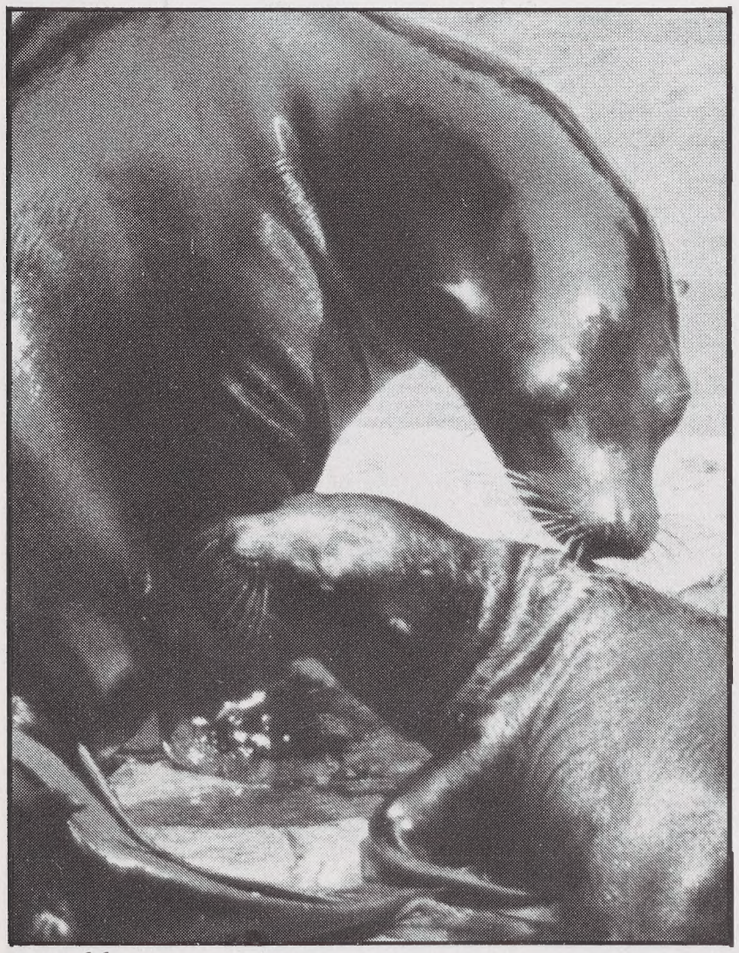

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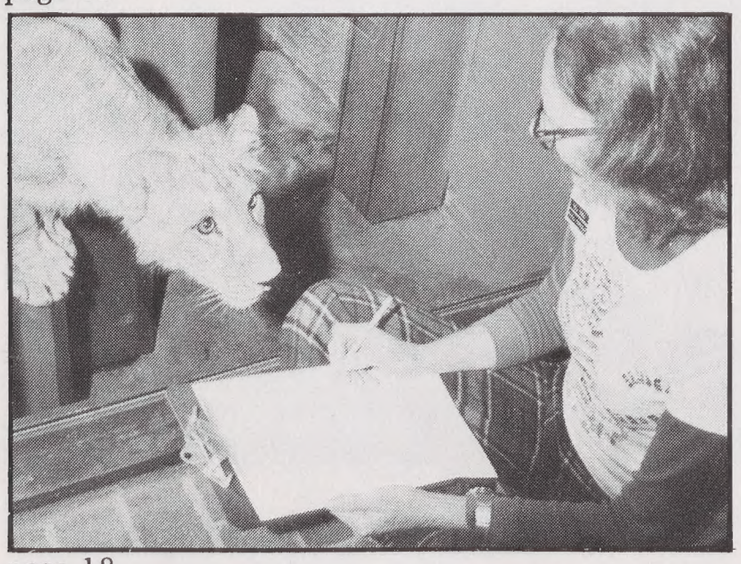

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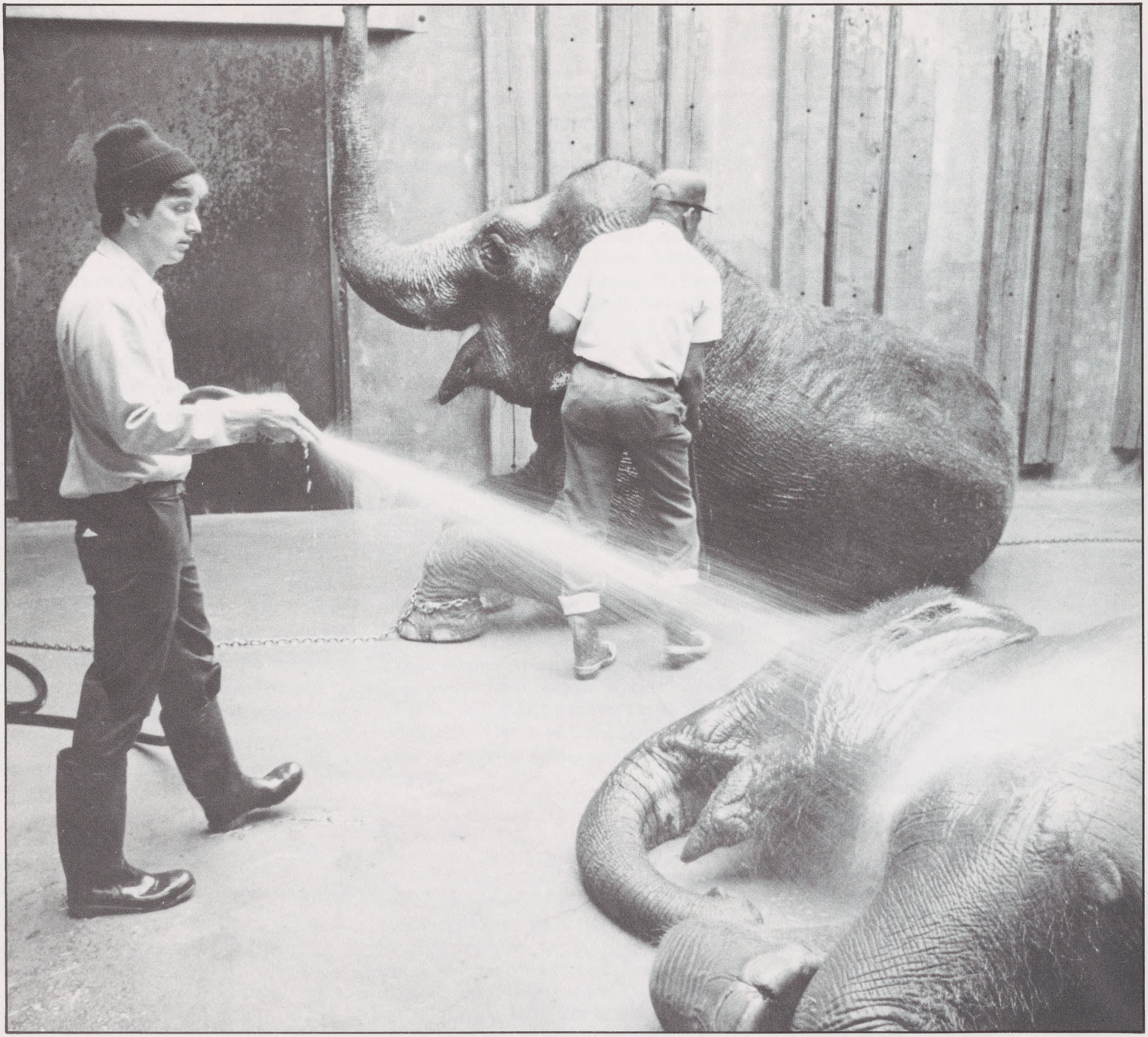


Martha Tabor, Working Images

Most keepers hose down cages; a few hose down elephants as well. Jim Lillie (left) and Jim Jones clean the Indian elephants, Shanti and Ambika.

To Be A Keeper

Rena Yount

The work force at the National Zoo includes researchers, veterinarians, administrators, secretaries, guards, carpenters and electricians, to name a few.

But the people closest to the animals are the keepers. Every day they feed and care for hundreds of species of animals, from alligators to zebras. They must be on hand to help solve the special problems that arise:

Two crocodiles fight, and one is injured. It has to be caught and confined so veterinarians can treat it.

A baby tamarin seems to be sick and needs to be taken from its parents for examination. That has to be done with the least possible stress on the animals.

A rhinoceros needs to be weighed. (This one is fairly straightforward, although it can be complicated and dangerous for the keepers. First, weigh a truck. Then tranquilize the rhino mildly, herd it into the truck and weigh both.)

Of the 400 employees at the National Zoo, keepers are the ones zoogoers are most likely to see. Visitors are apt to regard keepers with a bit of envy and much curiosity.

Keepers at the National Zoo are a varied and interesting group of people. Their work is often hard and sometimes dangerous, but its reward is a special closeness to the lives of animals.

How does one become a zoo keeper? Walter Tucker, who's been keeping apes for 28 years, got into it by accident. In the early '50s, he was an orderly at Saint Elizabeth's psychiatric hospital. After he was knocked unconscious by a patient wielding a metal pipe, he decided, not surprisingly, to look for a new job. There was an opening at the National Institutes of Health for a keeper of Rhesus monkeys. Tucker took the job, and then in 1953, he transferred to the Zoo.

"People didn't want to work at the Zoo then," he says. "There used to be a shortage all the time. You'd tell people you worked at the Zoo and they'd smile, like that was a nasty job."

But Tucker decided he liked it. "I never did think of leaving. I came in, got attached to the animals and have been satisfied ever since."

Twenty years ago, zoo keeping *was* low-status, low-paying work. The people who took the jobs may have known little to begin with about kangaroos or Kodiak bears. But years of experience have given many of these older keepers a knowledge of their animals that is hard to match.

With the rising interest in ecology and conservation, attitudes toward animal work have changed. Today many keepers have bachelor's or even master's degrees. The National Zoo has many more applicants than it can hire.

Michael Davenport, for instance, finished college with a degree in zoology in 1970 but could not find a job in animal work. After months of

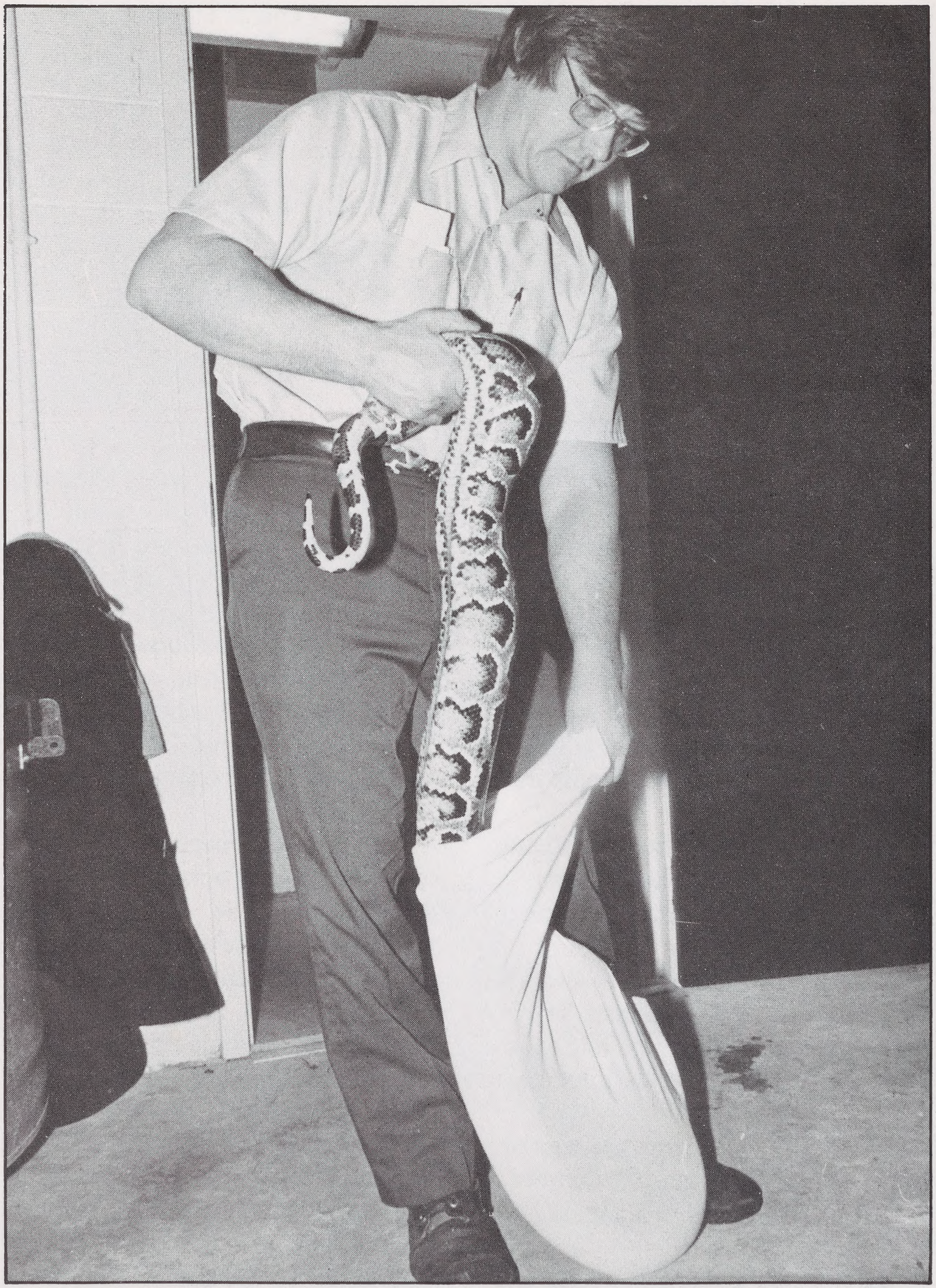
unemployment, he took a job driving a pet-food truck.

Davenport returned to the Zoo several months later, however, to talk to the reptile curator about his pythons. He has been a reptile lover since childhood. "I think it started when my father told me not to go out in the woods because there might be snakes. Well, you know how kids are. I went out *looking* for those snakes." The curator exchanged notes on snake breeding with him and then encouraged him to reapply for a job.

But it was not until 1972 that Davenport landed a job as a reptile keeper, a position he has no intention of letting go. Energetic and outspoken, he talks about reptiles with a lively enjoyment that has not lessened with time.

"The colors and forms are fascinating. You can look at a snake and you say, oh, the snake is gray. Then you get right up close, look at one scale, and you'll find three or four different colors in it."

For keepers, appreciation of the animals is the key issue. Davenport says, "It really makes my day when someone comes up and acts interested in the reptiles and asks intelligent questions. I like that. But a lot of people come in and say, 'Hey, man, I'd like to have a pair of boots made out of those.' They don't even recognize the beauty that's right in front of them. It's a joke to them. It's fun and games. Animals vanishing in the world is not fun



Martha Tabor, Working Images

Reptile keeper Mike Davenport gets a Burmese python under control for weighing by placing it in a cloth sack.

and games to me."

Zoo keepers still do a lot of plain hard labor. They hose down cages, shovel manure, chop fish for the sea lions and bamboo for the pandas, haul bags and bales of feed and bedding.

But they also watch and record animal behavior such as courtship, mating and rearing of young. Often they help design animal exhibits. Many do research and publish scientific papers. Whether or not they do formal research, keepers are involved in the broad effort to understand and manage animals better in captivity. The animal world is vast and intricate, and our knowledge is very limited. There are times when keepers and curators have to improvise, or guess. Or it may be only luck that finally provides the clues.

For example, the Zoo has a pair of hairy armadillos that would not breed for years. That was no surprise because few zoos have been successful in breeding this species. The armadillos were moved to new quarters when renovation began on the Small Mammal House. There they presented their startled keepers with two offspring! The problem is to figure out why.

Animals will not reproduce unless they have the right conditions, which may be complex and far from obvious. Since the armadillos are being kept with bats in their new enclosure, they have higher humidity and a carefully controlled day-night cycle. Those may have been the key factors.

Or it might be simply that the armadillos have more space and more hiding places for nest-building. Looking at the differences between the two enclosures, keepers help try to pin down what these particular animals needed to breed.

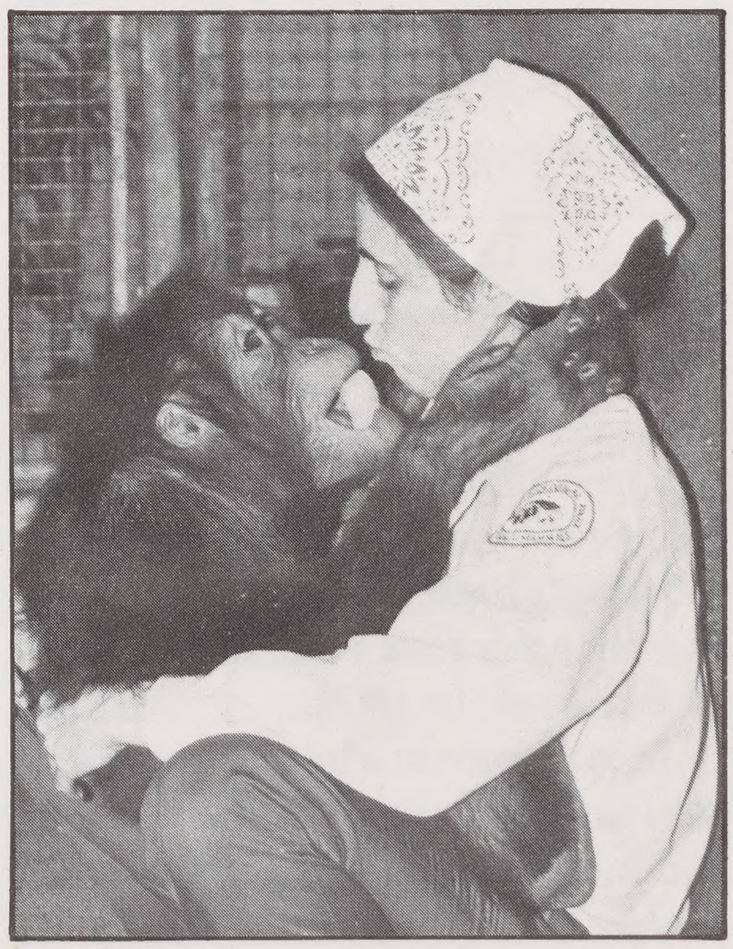
"People didn't want to work at the Zoo then. . .you'd tell people you worked at the Zoo and they'd smile, like that was a nasty job."

Keepers consider it part of their jobs to spend time simply watching their animals. Melanie Bond, ape keeper, says, "You have to have a sensitivity, notice little subtle things. Maybe somebody's just a little droopy today, or not eating much, and if you don't take the time to watch, you don't notice those things. By the time they really start showing they're sick, they may be pretty far gone."

Walter Tucker agrees. He knows each ape's routines and moods. He remembers one orangutan named Ginny that he was particularly close to. Even when she had her baby (Atjeh, the adult male now at the Zoo), Tucker was able to go into her cage to check on the infant's development. This is a remarkable measure of trust on the mother's part. But Tucker was careful to take his cues from Ginny.

"If she'd look at me and start rolling her eyes, I'd ease on back out of the cage. She'd warn you," he says. "But it was up to you whether to take the warning or not."

Knowing the animals and gaining their trust makes day-to-day work easier and safer. Once, for instance, Ginny escaped from her enclosure into an area behind the old Ape House, surrounded only by wire fencing. It was Sunday afternoon, a busy time at the Zoo. She wasn't likely to hurt anyone unless she felt threatened, but in a crowd that could easily happen, and her



Martha Tabor, Working Images

One of NZP's orangutans shows its fruit snack to keeper Melanie Bond.

strength made her extremely dangerous.

Ginny was quickly surrounded by police who were prepared to shoot her if she broke out of the yard. Tucker tried a different approach.

"I was afraid to go back there with Ginny. People were screaming and hollering so much, and she seemed pretty nervous. But I made up my mind and walked on back.

"The police had their guns and rifles and things—I kept telling them to stay back and not to rush up on me because she might kill me. I took her a piece of chewing gum and started playing with her. Didn't feel too damn good doing it, now, but I played with her a while and got her back in her cage."

"You have to have a sensitivity, notice little subtle things."

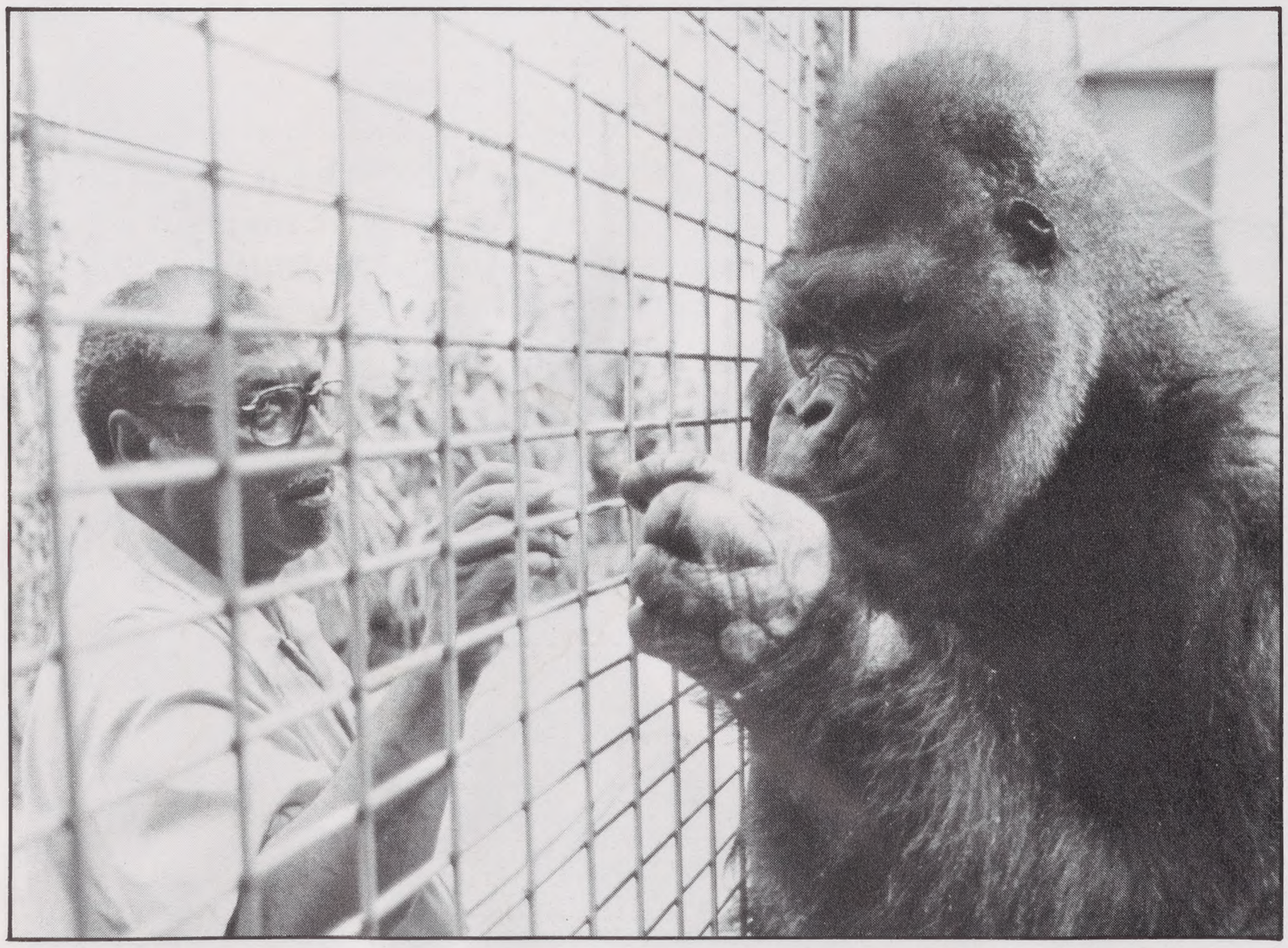
One change in zoo keeping has been the arrival of women in the keeper force. One-fourth of the keepers at the National Zoo are now women, a high percentage considering that the first woman keeper began work in 1971.

Most women who choose this unconventional career have a lifelong interest in animals. Morna Holden, for instance, is 32 and has worked with animals for the last 15 years. She has a rich stock of memories from two zoos, a wildlife preserve and other jobs.

She also has an innocent smile she saves to go with certain stories. She explains, for instance, how she once stopped some camels from showing displeasure by spitting on her. "I took up chewing tobacco," she says, and smiles.

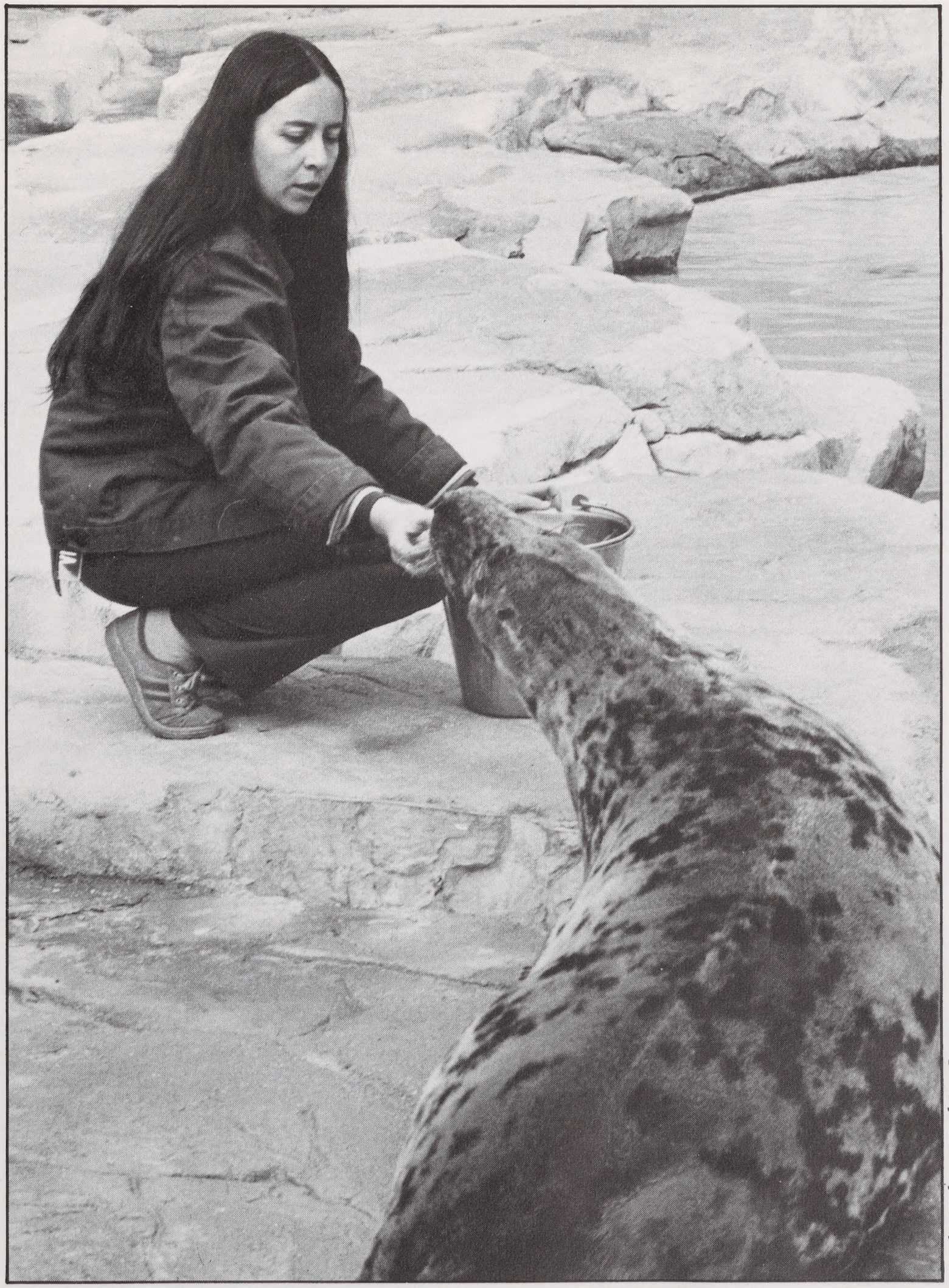
Holden currently works with aquatic mammals and bears. Seals and sea lions, favorites of zoogoers, are animals that keepers can work with directly. These animals are given training sessions every day, making them easier to handle and giving them variety and stimulation.

With bears, on the other hand, keepers maintain a careful distance. Yet Holden speaks of the bears with obvious fondness and a strong sense of their individuality. There are curious and friendly spectacled bears, a polar bear who is sometimes "a little slow on the uptake" and a Kodiak who is a "number one con artist." She likes to play sick, trying to lure worried keepers close enough to take a swipe at them with her paw.



Martha Tabor, Working Images

Gorillas are social animals that develop special relationships with their keepers. Here Nikumba takes food from Walter Tucker.



Martha Tabor, Working Images

Seals are trained daily to provide variety for them and to make handling easier. Morna Holden rewards a grey seal with a fish.

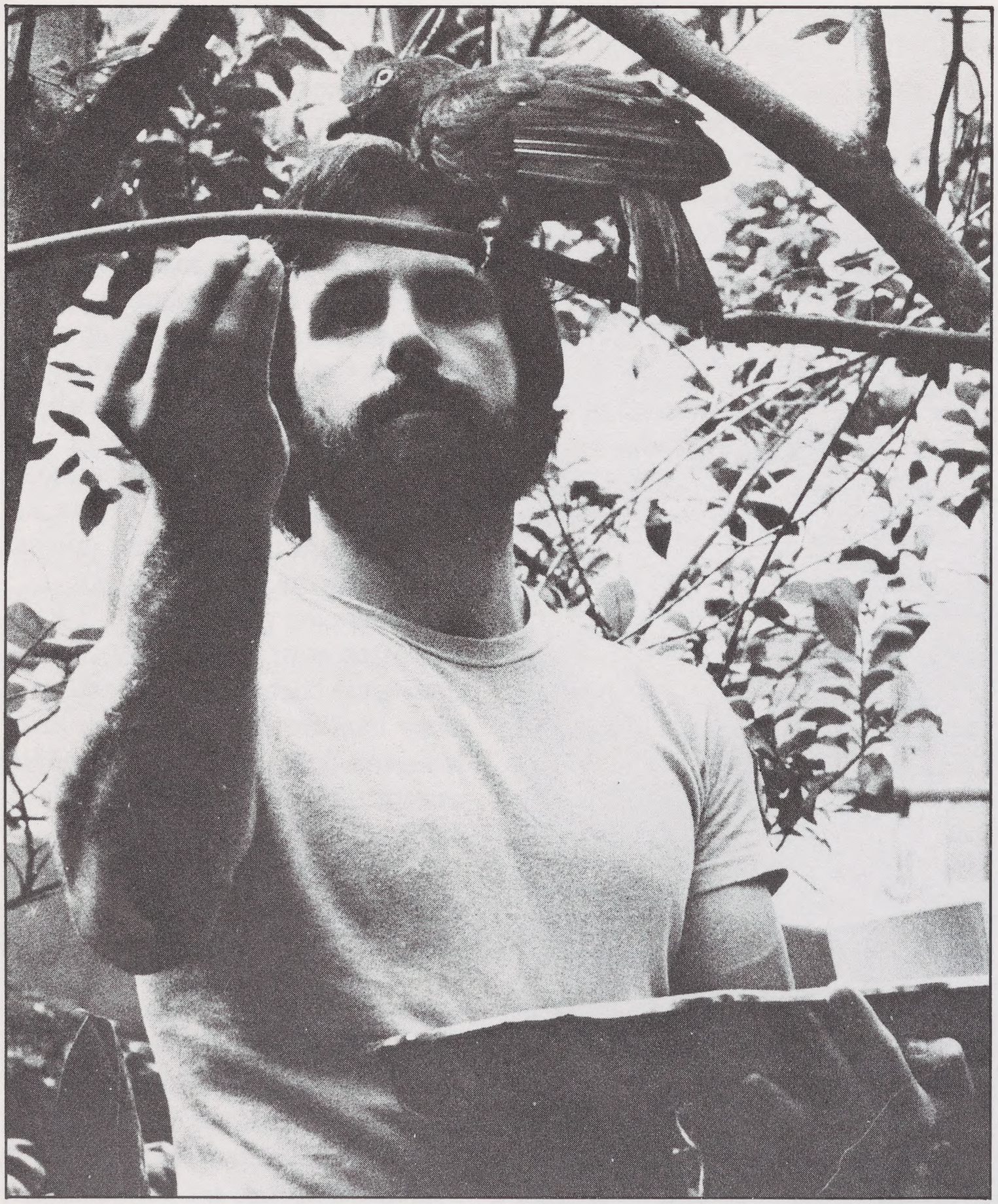
Like other keepers, Holden mixes her affection for the animals with a realistic sense of risk. Bears are handled through a complex system of shift cages and lever-operated doors. Always there is an element of danger. It is greatest when keepers come to work with something on their minds, family quarrels or personal problems, "anything at all to distract you from the fact that you can be killed any day if you pull the wrong lever."

Danger and dramatic moments are part of keepers' experiences. But most of their time is spent on the steady routine of daily work.

Keepers are on the job at 7 a.m. and often start by walking around their areas checking each enclosure. They look for illness or other problems, check to see if there is food left uneaten, and so forth. Then the day's work begins.

The specifics vary from unit to unit. In the Bird House, for instance, keepers start by putting out dozens of feed pans with everything from sunflower seeds to fruit or fish for the various species of birds. Then they hose down the flight room, clean cages, turn the soil, mist the plants, empty and clean water pools.

Sheer numbers are part of the challenge at the Bird House. With hundreds of birds in their care, keepers must notice when one starts losing feathers (which may signal disease) or when quarreling increases in a particular enclosure (which may mean the young are



FONZ Photo

At the Bird House, William Peratino offers food to a cock-of-the-rock.

getting old enough to be taken away from their parents).

In the Elephant House, there are far fewer animals, but the work load remains demanding. Every day keepers haul 600 pounds of hay, oats, apples and carrots for the elephants, plus food and straw for giraffes, rhinos and hippopotamuses. There are different health problems to watch for (hippos, for instance, often have trouble with their teeth) and training routines to be carried out with the elephants.

At the end of the day, keepers in each area write up daily reports. These cover any unusual activity, such as courtship display, breeding or fighting.

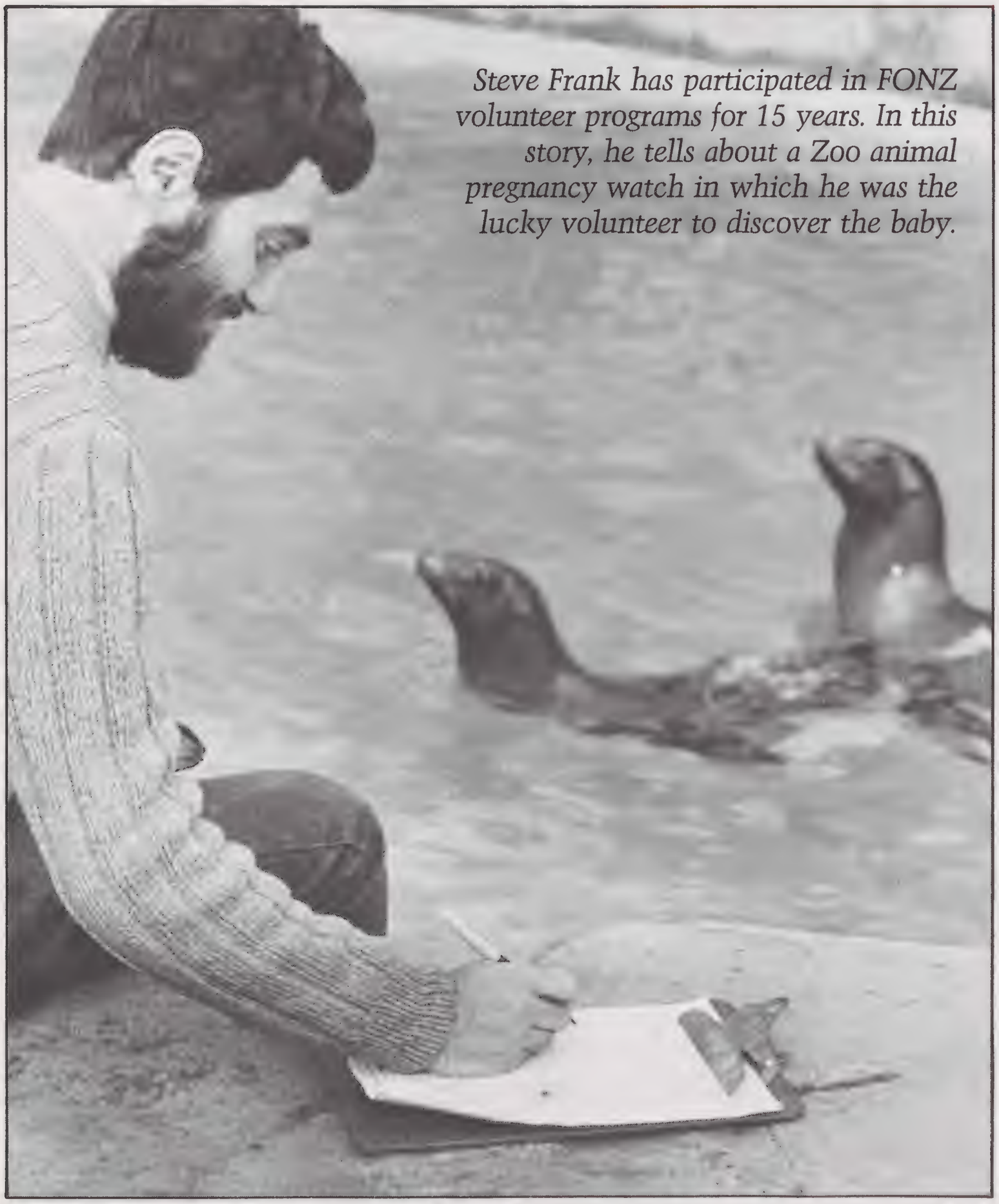
"It really makes my day when somebody comes up and acts interested. . . ."

Caring for captive animals requires endless attention to detail. Asked what it takes to make a good keeper, Walter Tucker says, "You have to have an observing kind of mind." He nods toward Hercules, a silverback gorilla in an enclosure nearby. "That animal can't talk to you," he says. "It's up to you to pay attention." He considers a moment. "And you have to *care* about the animals. That comes first."

The caring and attention keepers bring to their jobs are an important part of what makes the National Zoo work.

Rena Yount is a Washington free-lance writer.

Preg Watch



Steve Frank has participated in FONZ volunteer programs for 15 years. In this story, he tells about a Zoo animal pregnancy watch in which he was the lucky volunteer to discover the baby.

Judy Wulff, NZP Office of Graphics and Exhibits

Steve Frank

Four-thirty in the morning. I must be crazy. It's hard to believe that I would agree to another preg watch, after all these years, but one at this hour questions my sanity.

Gorillas. Pandas. How many thousands of hours of FONZ preg watching without a birth? Well, it's into the car for a drive to the Connecticut Avenue gate. At 5 a.m., there is no traffic. Most of the street lights are flashing yellow, as I set speed records.

I press the buzzer to be let in and wait for the reassuring voice to ask over the intercom, "Who is it?" Instead, the gate swings open eerily, and I have visions of a Hollywood movie about someone trapped in a zoo during the dark of night.

I drive in and a Zoo police car meets me at the bottom of the hill to lead me to the lower parking lot. From there, it's a short ride in the police car to Beaver Valley and the California Sea Lion exhibit with the pregnant Pearl, among four other ladies.

Pearl was described to me when I got all the information on the preg

Jessie Cohen, NZP Office of Graphics and Exhibits

Mother Pearl and her youngster bask together.

watch: time of my shift, what to look for, whom to call in case of delivery. I'm on the lookout for a very light colored sea lion. I've been told also that she will probably go behind the rock pile to give birth.

I prepare to settle in with my backpack full of the goodies that have proved essential during preg watches: a good book, newspaper, a thermos of coffee, binoculars and some fruit.

The police officer who admits me to the keepers' area says there is a large sea lion in the holding pool behind the rocks and indicates that it's probably the animal I'm looking for. I put down my pack and look around. There are three large boxes of frozen fish defrosting; food orders for trout, herring, apples, oranges, dog chow, carrots and bread; pails and other equipment and the phone.

Now I investigate my charges for the next three hours. This large, active animal in the holding pool is too large to be Pearl and is definitely not light colored. Also, I was told Pearl would be swimming around in the main pool area. Let's check further.

There is one sea lion at the top of the steps in the main area, right near the gate, with what looks like a torn-up fish.

But next to the gate is a pool of blood. Could this animal be Pearl? Did she have some complications? Did she have a baby? There is no sign of a pup. Let's get out the binoculars and have a closer look.

The sea lion is curled up and motionless. It's hard to say what has happened. Wait . . . there . . . below her and nearly hidden in her coat. It's a little head! She *has* given birth!

"Quick," I think, just like a new father, "let the world know." I run into the keepers' quarters and try to get a phone line—it takes me a moment to realize that I need to dial "9" to get an outside line. Finally, I manage to get a call through to Kayce Cover, the main keeper.

I look at my watch. It's 5:25 a.m. A voice at the other end of the line struggles to say "Hello." I excitedly relay the information, and Kayce tells me she will call the Zoo veterinarian. I should keep an eye on

the pup and Pearl. When I ask if there is anything I should do, Kayce tells me to watch particularly closely if the pup gets into the water. If it appears to be in danger, I should get the pole with the net on it and net the pup out.

Relieved that the announcement is made, I head back to the main pool area with pen and paper to gather potentially vital information about Pearl and her pup.

Pearl is on the second step from the back gate, and the pup lies on the step below. The mass I thought was a torn-up fish is the placenta. There's more blood on the top step. This is the widest step and the one furthest from the pool. The birth probably took place here.

At 5:55, the pup starts to move and nuzzles Pearl. This continues, with Pearl nuzzling in return, for a few minutes. They begin a sort of barking, with the pup's voice faint and Pearl's quite loud and forceful.

Then it happens. The pup starts for the pool, one step at a time. Pearl starts after it, apparently trying to call it back, but she is always one step behind. They disappear from my view, heading down the steps. As I race around to the visitors' viewing area to find them, visions of climbing the fence and diving into the water dance through my mind.

Pearl intercepts "our" baby just before it gets to the pool and places herself between it and the water. Here the two of them rest and catch their breath. Then Pearl grabs the pup by the nape of the neck and, half carrying, half dragging, moves it back toward the top of the steps away from the pool. By now, it is 6:05, and I can't remember a more exciting ten minutes since my own Homo sapiens children were born.

Now the mother and pup nuzzle each other for about ten minutes. Pearl seems to be occasionally petting the pup with her right rear flipper. The two settle down and rest.

At about 6:45, a native species appears: a National Zoo jogger out for the morning workout. Together, we notice that Pearl has been lactating, and there is a white stream of milk running down the steps. It seems the pup is trying to suckle, but Pearl will not roll over on her side. The milk just trickles down. This is important for me to note, because the keepers hope Pearl will take complete care of the pup.

The jogger moves on. The other sea lions in the pool continue to do what they have been doing since I arrived more than an hour ago. Two are sleeping on different rocks and two are swimming.

Just after 7:00, Kayce and the other keepers arrive with broad grins. They note that the baby looks very healthy and filled out. They chat about the event and then leave to do their jobs: tending the bears, preparing food, performing other chores.

At 7:15, another sea lion finally notices the newborn pup and calls over a second adult, who watches briefly. Then they both swim away.

I stay until Kayce is ready to keep the watch and then, with great satisfaction, walk through the Zoo to my car. I reflect on the morning and the countless hours of previous preg watching. This was one of the most exciting times in my life.

In the evening, I return to the Zoo to pick up the binoculars I loaned to the keepers. I find a lot of activity. A photographer is finishing a photo session with Pearl and the pup. Another FONZ volunteer is on the watch, taking copious notes, because the Zoo has asked for around-the-clock observation.

The veterinarian has cut the umbilical cord, completed preliminary tests, determined sex and given a tentative clean bill of health to Pearl's daughter.

Kayce was concerned about the pup getting into the water while its umbilical cord was still attached, because that can cause complications. Now that the cord has been removed, the pup has been given her first very cautious swimming lessons by Pearl. I learn that Pearl successfully nursed the pup in the morning.

Pearl is proudly perched on the promontory jutting into the sea lion pool, head erect and chest out for all the viewing public to see, with her newborn daughter sleeping, cuddled at her flippers. As I leave, I know that, for me, all the waiting has been worthwhile.

Bats!

Joan Mentzer

"Eye of newt, and toe of frog,
Wool of bat, and tongue of dog. . ."

The three witches in *Macbeth* knew how to whip up a powerful, frightening brew. Just the sight of a "wooly bat"—flying through an open window in a Dracula movie or roosting in your own attic—gives most people the shivers. After all, bats are dirty, vicious, good-for-nothing creatures, just waiting to fly into your hair and bite you in the neck. Right?

Wrong! Dr. Edwin Gould, curator of mammals at the National Zoo, says that all 800-plus species of bats are complex and interesting animals. They are mostly helpful, not harmful, to humans.

One of the bat's better-known characteristics, its navigational system, is the basis of continuing research in communication problems and the study of how animals process information. The facial features, strange-shaped ears and noses which humans find so unappealing in bats, are aids in this system.

Active only during the night, bats use echolocation to perceive objects. They emit pulsed sound waves in frequencies outside the range of human hearing. The sounds bounce off objects in their path and, from the echoes that come back, the bats determine the position of obstacles or prey.

This sophisticated sonar system makes them good at avoiding unwanted objects, including people, and at zeroing in on their food. Neuroscientists can study echolocation to learn how the brain is compartmentalized for processing specific sounds and how the bat manipulates the sounds it emits.

Dr. Gould has done research on communication between bat mothers and infants. He believes the baby bat's sounds may develop into sonar sounds, as baby tries to imitate the reunion calls of its mother when she returns to the roost after flying out for food. The echolocation clicks of the mother may turn into communication between parent and young.

A New Zealand engineer, Leslie Kay, used features of the bat's echolocation system to design a spatial sensor for the blind, particularly for young children.

The device fits around the forehead like a bandanna and has two small loudspeakers at the ears which send out an ultrasonic beam of sound. The returning echo from a nearby object is changed into a sound audible to the human ear, allowing the child to examine the surrounding area via the unique sound each object makes. A blind child can more fully explore a dark world through the interaction of touch and hearing.

The feeding habits of bats help maintain the proper balance in nature. Insect-eating bats are important in the control of insect populations, and nectar-feeders are pollinators. Tropical balsa tree flowers, wild bananas, the kapok

used in mattresses and life preservers—all are pollinated by the bat. Many bat species provide excellent fertilizer in their droppings, or *guano.*

There are also fruit-, fish- and meat-eating bats, and, of course, the vampire which eats nothing but blood. The vampire bat is small and shy, unique among the bat species. It is very agile and can leap forward, backward or sideways, stand and walk upright. This agility is a big help if the bat has to make a quick escape while it seeks food.

The vampire quietly approaches a resting animal to feed, makes small cuts with two sharp incisor teeth, sticks out its curved tongue and directs the blood into its mouth.

Ranch and farm areas can have problems with the vampire since it includes livestock as one of its food sources. Its bite can be infectious, possibly rabid, and continued biting and blood-letting can weaken an animal. People have been bitten by vampire bats, but this is infrequent and can be avoided by always having a cover or shelter when sleeping outdoors. No need to worry in our area, though—the vampire bat lives only in Mexico and Central and South America.

By the way, don't blame the bat for the Dracula superstition. It developed in Europe long before vampire bats were discovered in the New World.

In the Philippines and Madagascar, where no vampire bat ever existed, there is a legend of a bat that attacks humans by attaching itself to the chest and drawing blood.

In Central America, Maya Indians sacrificed bats to a bat god who ruled the Kingdom of Darkness. In Europe, of course, the human vampire is supposed to change into a bat and

Jessie Cohen, NZP Office of Graphics and Exhibits

Bananas are part of the diet for the Zoo's leaf-nosed bats.

roam about searching for victims.

There is no basis for these beliefs about bats, but imagination can be a powerful stimulus. As Dr. Gould explains, "Things that you can barely see and that come out at night and are so mysterious make people superstitious and fearful."

But some Europeans, even today, believe that a bat brings good luck, and they nail the dead animal over the doors of houses, stables or barns. The Finns have an explanation for bats venturing out only at night: While people sleep, their souls may escape from their bodies and become bats. In China, the bat is a symbol of good fortune. The Chinese word for bat, *fu,* also means happiness and good luck.

The rumored curative powers of bats are unproven, but many years ago bat medicine was thought to cure all sorts of diseases, including asthma, rheumatism and tumors. Using bats for wartime service is documented, however, During the Civil War, bat droppings were collected by the Confederates from caves in Texas and New Mexico to help make gunpowder.

During World War II, plans were made by the United States to fasten fire bombs to bats' chests and drop the animals from planes over enemy cities where the bombs would explode and spread fires. Although tests showed the plan might work, it was abandoned because the safety of the plane crew carrying the bats couldn't be guaranteed and because

Jessie Cohen, NZP Office of Graphics and Exhibits

Jessie Cohen, NZP Office of Graphics and Exhibits

The Zoo's leaf-nosed bats, native to South America, are a self-sustaining group, reproducing each year. They are on exhibit in a darkened display area in the Lion-Tiger Building. Researchers think the bat's nose projection helps direct its echolocation sounds.

an alternate weapon, the atom bomb, was well along in development.

There is no need to fear bats or to exterminate them. Bats keep quite clean by almost constant grooming and licking. About one percent of the United States bat population may be rabid, but people aren't threatened since we normally don't come in contact with the animals.

Bats in a house can be a nuisance. The easiest way to get rid of them is to plug up their entrance holes after they fly out in the evening. Deliberate bat extermination has decreased bat populations around the world. Bats have also died from consuming insects containing pesticides. Some bat species are endangered, including two in the U.S.

Current research is still focusing on the bat sonar system and also on how the bat's social system (its feeding habits, for instance) relates to its ecological adaptations, such as following changing patterns of plant growth to find food.

Bats are useful and generally harmless creatures, perhaps curious about you as an object in their world but having no desire to make contact. Dr. Gould puts it more formally: "They are an integral part of a complex ecosystem." And, who knows, they may bring good luck in the bargain!

Joan Mentzer is a free-lance writer who didn't care for bats until she did the research for this story.

FONZ NEWS

Did You Know. . .

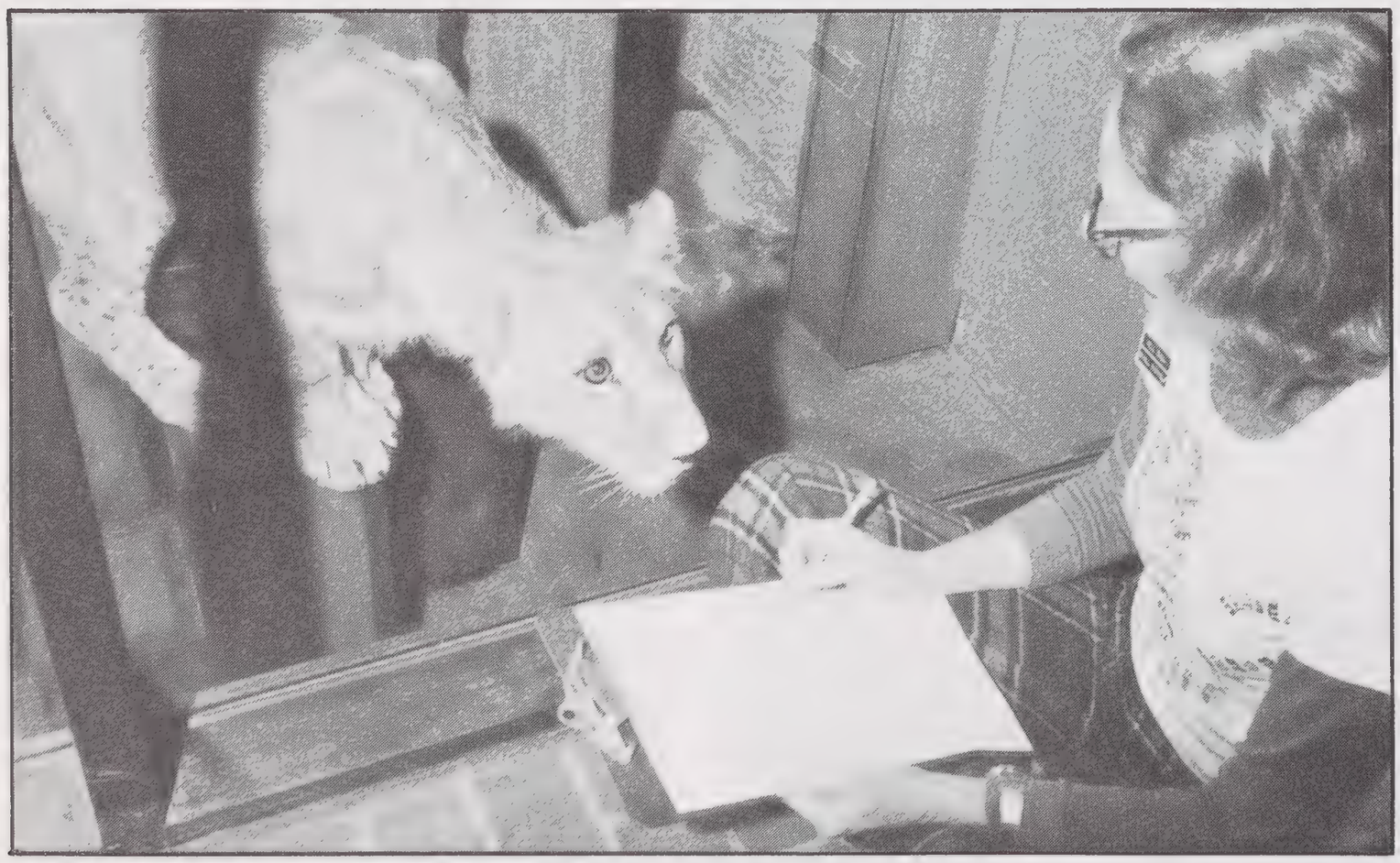
- That as a Contributing member of Friends of the National Zoo ($40 per year) you receive invitations to special receptions and behind-the-scenes tours!
- That as a Sustaining member ($75 per year) you receive invitations to special events *and* a free poster each year. Most important, your dues are used directly as a contribution to the National Zoo for its conservation and research programs!
- That as a Patron member ($125 or more per year) you receive the special event invitations, a special book each year (such as our just-published *Guide to the National Zoo*)—and your dues help the National Zoo!

When it's time to renew your FONZ membership, consider upgrading your membership category. Your contribution to FONZ is tax-deductible.

Thanks!

FONZ extends a special thanks to Silberne Sales of Washington, D.C. and The Washington Post for their generous support as new Corporate members. Their tax-deductible contributions will help assure the survival of our priceless wildlife heritage.

For more information on how your company can become a Corporate member of FONZ, please call 673-4960.



Lis Glassco

FONZ volunteer Nell Ball demonstrates how to do an animal behavior watch when the animal is watching you. *Behavior watches are one of the many ways FONZ volunteers help the Zoo while enjoying fascinating experiences themselves.*

FONZ grants help wildlife conservation

FONZ members can be proud of their organization's support of the research and conservation projects conducted by the National Zoo.

Some of the research has a direct relation to the Zoo animals and the survival of their species. Other projects develop valuable data that will serve as a basis for future work.

Here are some of the projects FONZ supports:

In 1982, FONZ funded a graduate student to assist Dr. Devra Kleiman, head of research, in studies of the golden lion tamarin. NZP has had great success breeding these animals, which are almost extinct in

the wild in their native Brazil. With continuing FONZ help, Dr. Kleiman is developing a pioneering plan to reintroduce them to Brazil's Poco d'Anta Reserve.

FONZ will continue to fund chief Zoo veterinarian Mitchell Bush's postdoctoral training program in animal reproduction. The program is now in its third year, and Dr. Bush reports that there is no other such training program available. The program focuses on artificial insemination and other aspects of breeding exotic animals in captivity, with the goal of maintaining genetic diversity in healthy populations.

FONZ has also funded Dr. Bush's Africa field trips to develop techniques for immobilizing and electroejaculating cheetahs and giraffes, with the goal of bringing sperm back to use for artificial insemination in captive populations.

Associate mammal curator Dr. Daryl Boness and Zoo nutritionist Dr. Olav Oftedal will receive funding to continue their study of the California sea lion at the St. Nicholas Island Sanctuary on the West Coast. The project focuses on mother-infant interaction.

FONZ supplied funds for Dr. Dale Marcellini, head of the Zoo's herpetology department, to study dwarf caimans in Surinam, comparing the wild population to the Zoo's captive animals to help improve breeding techniques for this rare species.

FONZ will fund continued efforts for NZP to acquire birds of paradise from New Guinea to exhibit and breed.

At the Zoo's Conservation and Research Center in Front Royal, Virginia, FONZ will fund a study of reproduction in the exotic ungulates maintained there under the supervision of Dr. Christen Wemmer, director of the Front Royal facility.

FONZ is also assisting with a radio telemetry project—see this issue's Zoo News for details.

Call Now to Join One of These FONZ Adventures. . .

China-Tibet

Although the 1983 FONZ expedition to China and Tibet is filled, we are accepting names for a "wait list." This remarkable adventure must be planned far in advance, so participants frequently cancel because of unexpected events. That means those on the wait list stand an excellent chance of going on this trip of a lifetime!

Participants in the 23-day adventure leave Washington, D.C., August 29, and their stops will include Xian, famous for its incredible tomb treasures; Kweilin, "the most beautiful city in China"; Chengdu, the capital of the far west province of Szechwan and forested home of the giant pandas; and, of course, Peking. Four days are spent in Lhasa, "Shangri-La" capital of Tibet and former home of the Dalai Lama.

The cost of the trip is $5,800. For more information, call 673-4950. If you are not able to join the 1983 trip, you may wish to sign up for 1984!

Scandinavia-Russia

FONZ invites you to join a special tour, July 19-August 7, cruising Scandinavia, Russia and the Fjords, aboard the elegant ship *Royal Odyssey*.

The cruise begins in London and ports include Copenhagen, Denmark; Leningrad; Helsinki; Stockholm; and Bergen, Norway. Optional shore excursions to the zoos of Copenhagen, Leningrad, Helsinki and Stockholm and to the aquarium in Bergen have been planned for your enjoyment. Before returning to London, the *Royal Odyssey* will cruise through Norway's second largest fjord, the scenically spectacular Hardanger Fjord. An optional pre- or post-cruise package is available for a two-night stay in London.

For more information and a cruise application, call 673-4950. Highlight your summer with this fantastic adventure!

ZOO NEWS

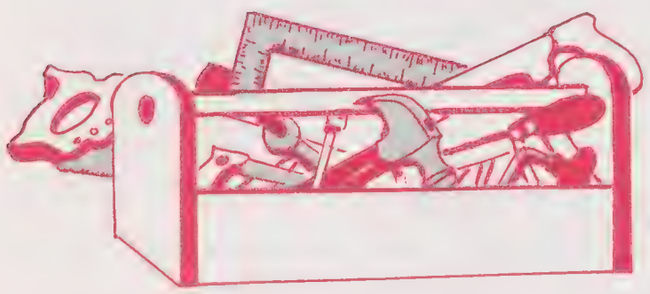
Renovations planned

Two of the Zoo's animal houses will be closed part of 1983 for major improvements, but the animals will continue to be on exhibit in their outdoor areas.

The Elephant House will be closed February through September. Ventilation and lighting will be improved, and the exhibits will be modified so the public will be able to see the animals better. The House will be prepared for the planned addition of new elephants.

There will also be changes to make animal handling easier for the keeper staff, including the installation of ramps to move the animals about more efficiently.

The Monkey House will be closed from May through December. New furniture will be added in the animal enclosures, and work will be done on the interior window frames, walls and doors.



Radio telemetry for animal study

Effective conservation programs are critically needed to save the world's wildlife, but nothing can be done without understanding how the animals live. This requires trained researchers using the best tools available.

With financial help from FONZ, Dr. John Seidensticker of NZP's zoological research department is addressing this problem by using an important study tool: radio telemetry.

Dr. Seidensticker and his team have captured and radio-collared more than 150 wild animals that roam the grounds of the Zoo's Conservation and Research Center in Front Royal, Virginia. Over the last three years, they have completed a study of the animals' patterns of movement and are now looking at how the animals compete for the available food.

The animals studied include black bear, white-tailed deer, bobcat, grey and red fox, striped skunk, raccoon and Virginia opossum. Nearly every animal that has been collared can be accounted for. Seventy remain on the Front Royal property, and many of these have been around all three years.

FONZ has funded a number of trainees and researchers for this project. Also, 22 FONZ volunteers have performed tasks from entering data into a computer to assisting with trapping and collaring the animals.

Dr. Seidensticker and his team members travel through the Front Royal property on foot or in jeeps. They use hand-held antennas and large stationary antennas placed around the property to monitor the "beeps" emitted by the collars. With the beeps and the precision direction antennas, the team can find an animal as far away as three miles and pinpoint its location to within 100 feet. Every animal is located at least once a week.

Dr. Seidensticker has been surprised by the large number of native wild animals that make their living at Front Royal. But he says also that quite a number become victims of highway traffic. The highway patrol is aware of the study and returns the collars found on animals that have been hit.

Fifteen years ago, when Dr. Seidensticker used radio telemetry to study mountain lions for his doctoral dissertation at the University of Idaho, only those insti-

tutions that could afford lab setups staffed by electrical engineers had access to the technique. Now the equipment is commercially available and the companies producing it help out with the problems. However, it did take two years for the NZP team to adapt the system to animal study at Front Royal—getting the stationary antennas in the right places, for example, to prevent the signals from bouncing around the Virginia hillsides.

Perfecting radio telemetry skills at NZP will help conservationists, particularly in less-developed countries. Dr. A. J. T. Johnsingh, who studied the techniques at Front Royal as a FONZ senior assistant, will soon be using radio telemetry on elephant populations in India for the Bombay Natural History Society.

Each summer, NZP's Dr. Rudi Rudran brings to Front Royal a conservation training course that he has developed. For six weeks, students and wildlife professionals from less-developed countries are briefed on state-of-the-art study techniques, including a one-week radio tracking workshop.

Madelyn Jacobs

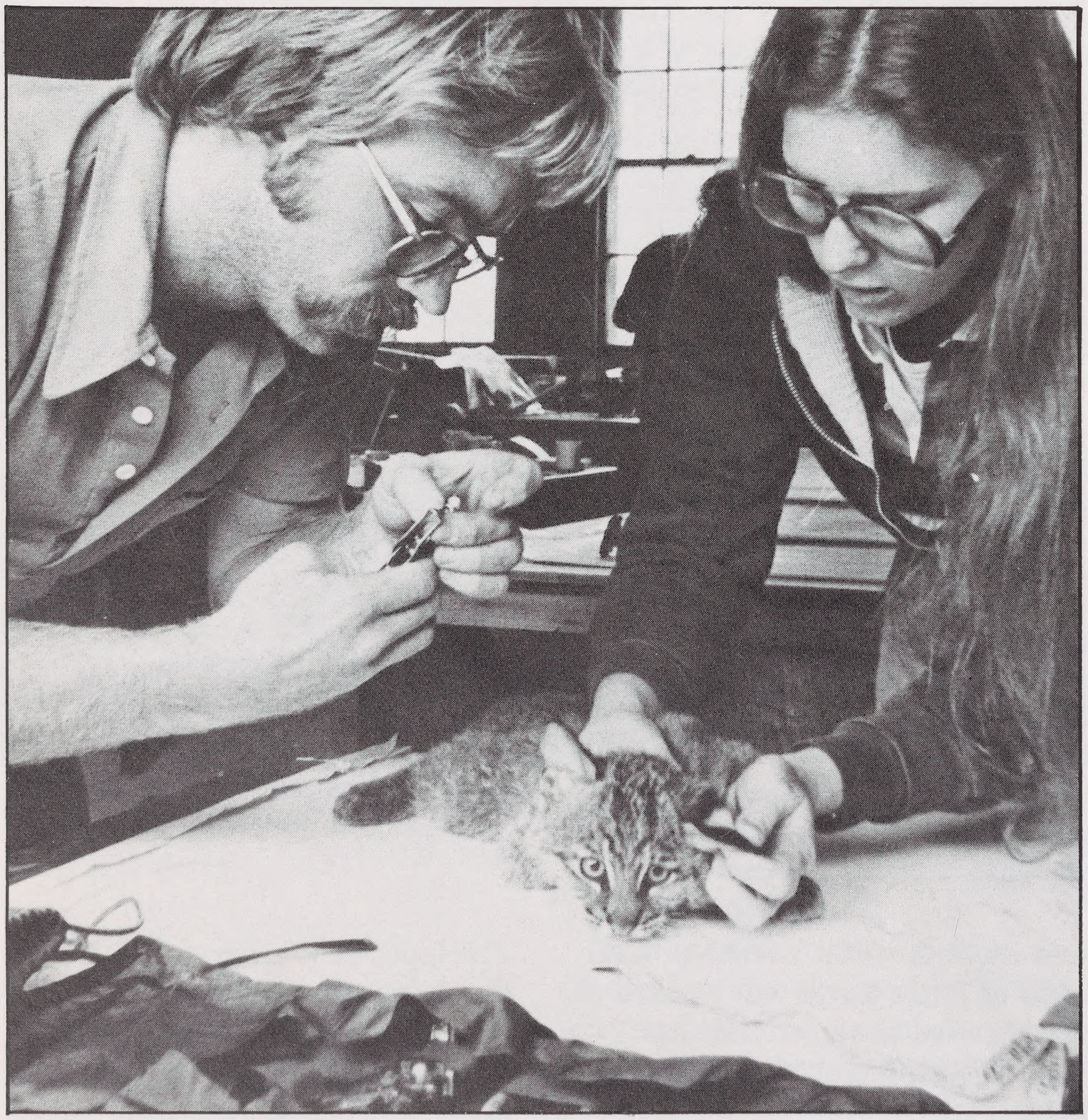
Junior assistant Greg Sanders uses radio telemetry equipment to locate animals that have been given radio transmitter collars.

The radio telemetry project is also developing procedures that can be applied to conservation and wildlife management programs around the world. An important example is NZP's plan to reintroduce golden lion tamarins in their native Brazil where they have become almost extinct in the wild. Methods developed at Front Royal will be used to track native tamarins and the captive-born animals once they've been reintroduced.

One unexpected discovery during the study at Front Royal was the serious rabies problem that has developed in Washington, D.C., and the surrounding Virginia and Maryland counties. Dr. Richard Montali, head of NZP's pathology department, and Dr. Seidensticker were among the first to bring the problem to the attention of the Centers for Disease Control in Atlanta after a

number of rabid raccoons turned up in the traps. Everyone working in the program is now required to have rabies vaccinations.

Unfortunately, about half the raccoons in the Front Royal area died during the rabies outbreak, and the population is only now beginning to recover. The incidence of rabies in native wildlife will be monitored carefully as an early warning measure to reduce the risk of the disease reaching the exotic animals.



Fiona Sunquist

A baby bobcat, native resident of the National Zoo's Front Royal, Virginia, property, receives a radio transmitter collar from junior assistant Greg Sanders and FONZ volunteer Dotty Emerick.

Dr. Otto Sieber, a postdoctoral student from Switzerland, has been studying the development and social behavior of the raccoon. He has learned, for example, that raccoons have eleven different calls for communicating with each other. Radio telemetry will allow Dr. Sieber to follow and study family groups, and his data will be used in comparisons with two important and closely related Zoo species: red and giant pandas.

The radio telemetry equipment requires that Dr. Seidensticker and his team members go out into the property at Front Royal rain or shine and sometimes all night. The plan for 1983 is to improve the equipment so that animal signals will come directly into the lab where the information can be punched right into the computer. It is even possible to upgrade the equipment so the computer could interface with the telemetry equipment.

But Dr. Seidensticker says there's a real advantage in a researcher keeping close to the animals being studied so the information gained through the telemetry can be interpreted in the context of the environment.

As he explains, "We don't want to get so caught up in the gadgetry of this that we forget what our purpose is and what questions we're trying to answer about understanding and managing these animal populations."

WHAT'S NEW AT THE ZOO?

Sunday Afternoons at the National Zoo, 1-3:30 p.m., Education Building, free admission.

February 20
Monkeys, Apes and Us—films and facts.

February 27
One String Attached—animal puppet-making workshop with Bob Brown Puppet Productions (the string attached: bring a scarf-sized piece of fabric).

March 6
Art in the Park—sketching animals.

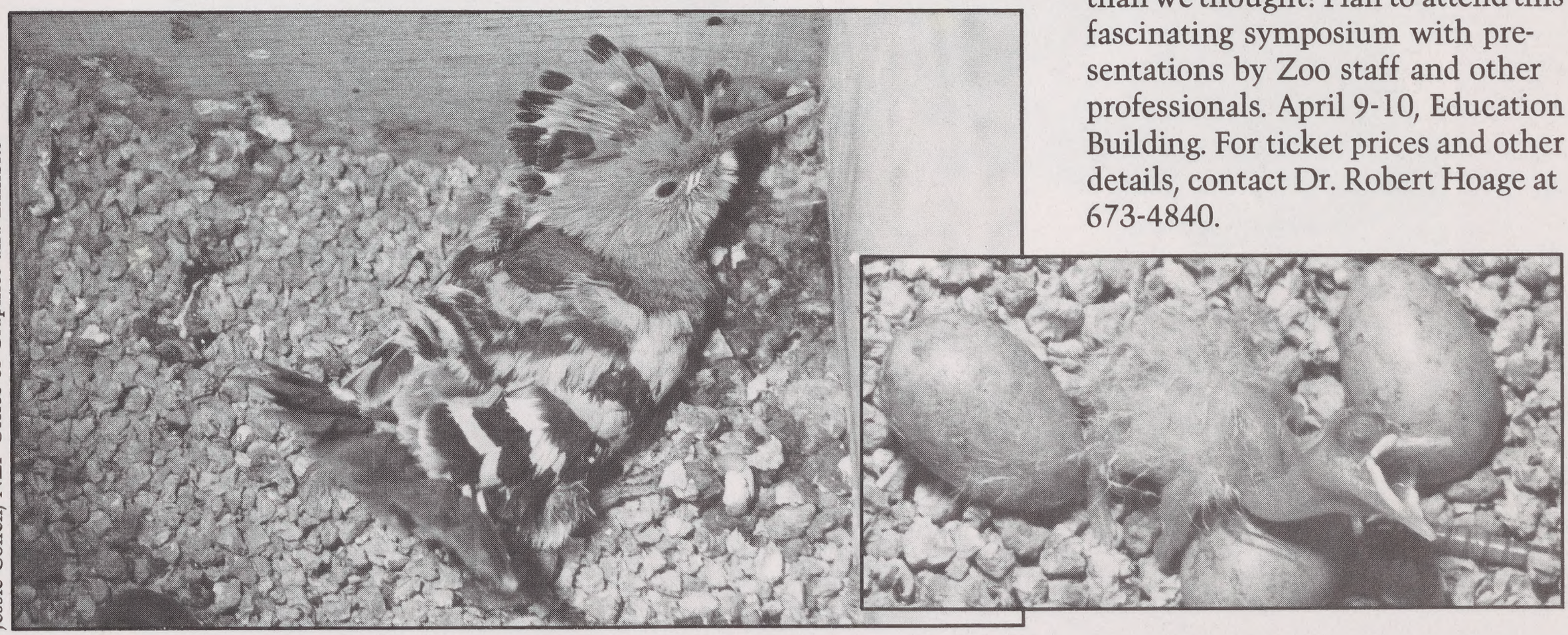
March 13
Snow Foolin'—for any program that's been snowed out.

For more information, contact FONZ at 673-4955 or the Zoo Office of Education at 673-4724.

Small Mammal House reopens April 1.
Come see exciting new animal exhibits in this renovated facility!

Lecture: The Value of Species for Human Welfare
Conservationist Norman Myers, author of *The Sinking Ark*, will speak on the value of certain animal species to our daily welfare.
Saturday, February 26, 1-2:30 p.m., Education Building. Admission $2.75, buy tickets at the door. (Admission for FONZ members, $2. Be prepared to show your membership card.)

Symposium: Animal Intelligence
Do animals think? Are they smarter than we thought? Plan to attend this fascinating symposium with presentations by Zoo staff and other professionals. April 9-10, Education Building. For ticket prices and other details, contact Dr. Robert Hoage at 673-4840.



Jessie Cohen, NZP Office of Graphics and Exhibits

The adult hoopoe on the left is one of a pair recently acquired from the Tel Aviv zoo. The pair surprised NZP bird keepers by producing young (right) almost immediately. The youngsters are now flying and can be seen around the top of the rock formation in the Bird House indoor flight room.

FONZ member W. Harold Joice took this photo of the Zoo's hippos having a splash during a recent visit.

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